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Hydrophosphorylation of 1,3-diphenyl-2-propen-1-one and 4-phenyl-3-buten-2-one in the coordinational sphere of carbonyl complexes of Group VIB metals

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Abstract

Synthetic procedures for preparing η2 and η4 complexes of chalcone and henzalacetone with hexacarbonyl mononuclear complexes of Group VIB metals were developed and conditions for selective η2 and η4-coordination of the heterodiene ligand were established. Hydrophosphorylation of the obtained complexes proceeds in the coordination sphere of the metal by the Abramov reaction scheme and yields the corresponding η2-coordinated α-hydroxyphosphonates. As follows from quantum-chemical calculations, π-coordination with metals makes the heterodienes no longer planar, which explains their regioselective phosphorylation by the more electrophilic carbonyl group.

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